Social engagement is associated with sedentary time in older males but not females living in India: analysis of a cross-sectional survey

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Abstract

Purpose – *The purpose of this study was to describe the association between sedentary time and social engagement among older adults living in megacities in India.*

Design/methodology/approach – *Data from a cross-sectional survey conducted in New Delhi and Chennai were used for analysis. In the total sample (n = 528), 65% of older adults self-reported engaging in high (≥180 min/day) volumes of sedentary time. There were no associations between sedentary time and social engagement in older females.*

Findings – *Among older males, those reporting high levels of communicating or visiting with family and friends had lower odds of reporting ≥ 180 min/day of sedentary time (OR: 0.51, CI: 0.27–0.98) compared to those reporting low levels of this type of social engagement. Older males reporting high levels of participating in a club (OR: 2.27, CI: 1.19–4.3) or participating in religious activities (OR: 1.97, 1.01–3.85) were approximately two times more likely to report ≥ 180 min/day sedentary time compared to those reporting low levels of these types of social engagement.*

Originality/value – *These data suggest that the type of social activity appears to significantly affect self-reported sedentary time among older males, but not females. These findings have implications for interventions aimed at improving active aging among older adults living in megacities in India.*

Keywords *Sitting, Physical activity, Social isolation, Loneliness, Active aging, Age-friendly cities*

Paper type *Research paper*

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Introduction

Social isolation and loneliness are pervasive among older adults, worldwide. Due to their profound impact on a variety of health outcomes, social isolation and loneliness have been recognized as a priority public health problem and policy issue by the World Health Organization and the United Nations Decade of Healthy Aging (Leigh-Hunt *et al.*, 2017). In India, a country with nearly 100 million older adults, data indicate that approximately 20% are socially isolated (Kotian *et al.*, 2018). Supporting older adults with engaging in social activities is critical for healthy aging.

Unfortunately, many social activities in which older adults engage are sedentary in nature (Mcewan *et al.*, 2017). Despite being aware of the negative health consequences associated with too much sitting, older adults across the world report close to 10 h of sitting per day (Harvey *et al.*, 2015). Importantly, many older adults feel that there are significant cognitive, social and mental health benefits to the sedentary activities in which they engage (Mcewan *et al.*, 2017). This creates tension when encouraging social engagement among older adults, as there is often a trade-off in health benefits due to the increased sedentary time.

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The bidirectional relationship between social engagement and sedentary time is critical for healthy, active aging (Dogra *et al.*, 2022). Understanding this relationship is essential if we want to create quality interventions that support active aging. Thus, the purpose of this analysis was to describe the association between sedentary time and social engagement among older adults in two megacities of India.

Materials and methods

Study design: A cross-sectional study was conducted in two megacities (population $>$ 10 million) in India. Between May 2019 and January 2020, a diverse sample of older adults were surveyed in the cities of New Delhi (population: 18.6 million) and Chennai (population: 10.9 million). Neighborhoods in both cities were stratified to maximize variability in walkability and area-level socioeconomic status (SES) (Kerr *et al.*, 2013). Stratification based on SES was implemented to improve the representativeness of the sample (Turrell, 2000). Neighborhoods were ranked based on the walkability index and median household income (neighborhood-level SES). Approximately equal numbers of neighborhoods were chosen to represent four categories: high-walkable/high-SES, high-walkable/low-SES, low-walkable/high-SES and low-walkable/low-SES.

Sampling and data collection: A purposive sampling technique with a sex and age-sensitive approach was used. In each neighborhood, the lead researcher (DA) initiated contact with a small group of recommended individuals and expanded the sample by asking the initial participants to identify others who were interested in participating in the study. The lead researcher was supported by bilingual research assistants in each city. Participants were included if they were:

- currently residing in either city;
- residents of the city for at least six months;
- 60 years or older; and
- fluent in English, Hindi or Tamil.

Those with visible indicators of disruptive behavior (e.g. insobriety, substance abuse) were excluded.

Participants were able to select a date and time, location, and language preference to ensure their comfort and convenience. Information about the study, including the questionnaires and consent forms, was provided two days before their interview date. Researchers used a structured interview guide; they were trained to ensure consistency in the way that questions and answer options were presented. Surveys lasted between 45 and 60 min. Study procedures were approved by the Research Ethics Committee at Queen's University Belfast, UK (EPS 19_224).

Measures

Sedentary time was measured using the International Physical Activity Questionnaire; a valid and reliable tool for self-reported movement behaviors (Craig *et al.*, 2003, Cleland *et al.*, 2018). Respondents were asked to report the hours and minutes spent sitting during a typical day: "The first question is about the time you spent sitting during the last 7 days. Include time spent at work, at home, while doing course work and during leisure time. This may include time spent sitting at a desk, visiting friends, reading, or sitting or lying down to watch television. During the last 7 days, how much time did you spend sitting during a day?" This was converted to minutes per day. Due to the non-normal distribution, a median split was used to create two categories: high sedentary time ($\geq$180 min/day) and low sedentary time ($<$180 min/day).

Social engagement was assessed using a question with three items. Response options were never (1), rarely (2), sometimes (3), often (4) and very often (5). A median split was performed to create the following three variables for analysis:

1. participating in a club (e.g. book club, dance, game and other social), recreation program or group activity: low (1) and high (2–5);
2. communicating/visiting with friends and/or family: low (1, 2) and high (3–5); and
3. participating in religious or spiritual activities with others: low (1, 2) and high (3–5).

Self-reported age (in groups), sex, income and walking were also reported.

Analysis: Percentages were calculated to report demographic data and variables of interest for females, males and the total sample. Chi-squares were used to detect differences between self-reported measures of females and males. Crude associations between sedentary time with the three social engagement variables were calculated using a logistic regression. Models were then adjusted for income and walking.

Results

Sample characteristics can be found in Table 1. Of the total sample, 48.5% were female. Distinct variations were observed between males and females in levels of social engagement such as communicating/visiting with family and friends, and participation in religious activities.

Results of the logistic regression models are presented in Table 2. In crude models, higher levels of communicating and visiting with friends and family was associated with lower odds of reporting ≥180 min/day sedentary time (OR: 0.69, CI: 0.48–0.99), while reporting high levels of participating in religious activities was associated with higher odds of ≥180 min/day sedentary time (OR: 1.60, CI: 1.07–2.40). None of these associations remained significant after adjustment for age and income. None of the associations, crude or adjusted, was significant among females. In males, high levels of communicating and visiting with friends and family was associated with lower odds of ≥ 180 min/day sedentary time in both crude and adjusted models. Reporting high

Table 1 Sample characteristics

	Total n = *528*	*Female* n = *256*	*Male* n = *272*
Age groups			
60–64	43.4	47.3	39.7
65–69	38.6	35.9	41.2
70–74	10.8	9.0	12.5
75–79	4.9	5.1	4.8
80–84	1.3	1.2	1.5
85+	0.9	1.6	0.4
*Income categories**			
< Rs 5,000	2.3	3.5	1.1
5,001 to 7,500	2.8	2.0	3.7
7,501–10,000	7.0	7.4	6.6
10,001–20,000	22.5	27.3	18.0
200,001–50,000	36.9	32.4	41.2
500,001–100,000	12.5	7.8	16.9
>100,001	2.7	0.8	4.4
Prefer not to say	13.3	18.8	8.1
*Communicating/visiting family and friends**			
Low engagement	43.9	21.5	65.1
Participate in a club			
Low engagement	48.1	52.3	44.1
*Participate in religious activities**			
Low engagement	24.8	19.1	30.1
*Sedentary time**			
High (> 180 min/day)	64.8	69.5	60.3
Walking			
Low (< 60 min/day)	43.4	39.8	46.7

Note: *Indicates significant differences between males and females as per chi-square test
Source: Table by authors

Table 2 Crude and adjusted odds of reporting high sedentary time among those with higher engagement in social activities

	Total sample			*Females*			*Males*		
	β	*CI*	p	*β*	*CI*	p	*β*	*CI*	p
Crude									
Communicating/visiting with FF	0.69	0.48–0.99	0.05	1.03	0.54–1.96	0.94	0.33	0.2–0.6	<0.001
Participate in a club	1.33	0.93–1.89	0.12	0.81	0.48–1.38	0.44	2.17	1.32–3.55	0.002
Participate in religious activities	1.60	1.07–2.4	0.02	0.79	0.39–1.59	0.51	2.28	1.34–3.87	0.002
Adjusted									
Communicating/visiting with FF	0.68	0.43–1.06	0.09	0.84	0.38–1.88	0.67	0.51	0.27–0.98	0.04
Participate in a club	1.36	0.87–2.11	0.17	0.78	0.41–1.47	0.44	2.27	1.19–4.3	0.01
Participate in religious activities	1.35	0.82–2.22	0.23	0.64	0.27–1.51	0.31	1.97	1.01–3.85	0.05

Note: FF = family and friends adjusted models include income and walking
Source: Table by authors

levels of participating in a club or participating in religious activities was associated with higher odds of ≥ 180 min/day sedentary time in both crude and adjusted models.

Discussion

We describe the association between self-reported sedentary time and social engagement among older adults living in two megacities in India. Our findings indicate that there may be important sex and gender differences in the relationship between social engagement and sedentary time among older adults. We also found that the type of social activities older males engage in may be important for supporting active lifestyles. These findings are novel and have implications for future programs and interventions aimed at building age-friendly communities that support active aging.

The finding that social activity was associated with sedentary time is consistent with previous literature. A study conducted in older adults from Japan found that higher social participation was associated with more physical activity in males and females but was only associated with sedentary time in males (Kikuchi *et al.*, 2017). This is in line with our findings that there is a strong difference in the patterns of active aging between older males and females. Our study revealed that a greater percentage of males reported low engagement in communicating/visiting with friends and family. However, among the males who engaged in this social activity, the odds of reporting high daily sedentary time were lower. Similarly, we found that participating in a club or religious activities was associated with higher odds of engaging in ≥ 180 min/day sedentary time. These observed sex differences may be due to gender differences in preferences of activities (O'Neill and Dogra, 2016). For example, a study from India showed that males are more likely to be meeting physical activity guidelines but engage in less active transportation (Adlakha and Parra, 2020). Thus, opportunities exist to support males with reducing their sedentary time while retaining their social activities, but consideration of sex and gender may be critical for uptake and engagement.

It is unclear why there was no association between sedentary time and social activity among females. Traditional gender roles may be driving this due to the impact they have on physical activity and sedentary levels (Bellettiere *et al.*, 2015). This may also be related to the types of sedentary activities older adults engage in, some being active and others being passive (Kikuchi *et al.*, 2014). For example, activities such as watching TV would be considered passive, while meeting with friends or playing strategy games would be considered active, as they provide social, cognitive or physical stimuli. Unfortunately, the data set did not include any assessment of gender identity, gender roles or the types of activities that older adults were engaging in to further elucidate these findings. Future research should focus on developing interventions tailored to meet the specific needs of older men and women.

In conclusion, we found that social engagement influences sedentary time among older males in India; however, some activities are associated with lower sedentary time, while

others are associated with higher sedentary time. The lack of association among older females may be attributed to variations in gender roles and identities. Future research is needed to better elucidate the possible gender differences in the interrelationship between social activity and movement behavior.

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